

ABSTRACT

Process for preparing a broad molecular weight polyethylene by polymerizing ethylene in the presence of a polymerization catalyst, the process comprising the following steps, in any mutual order:

- a) polymerizing ethylene, optionally together with one or more α -olefinic comonomers having from 3 to 12 carbon atoms, in a gas-phase reactor in the presence of hydrogen,
- b) copolymerizing ethylene with one or more α -olefinic comonomers having from 3 to 12 carbon atoms in another gas-phase reactor in the presence of an amount of hydrogen less than step a),

where in at least one of said gas-phase reactors the growing polymer particles flow upward through a first polymerization zone under fast fluidization or transport conditions, leave said first polymerization zone and enter a second polymerization zone through which they flow downward under the action of gravity.